CONTENTS OF VOLUME 387

June 1987

GRIFFITHS Nina M. & SIMMONS N.L. Vasoactive intestinal polypeptide regulation of rabbit renal adenylate cyclase activity *in vitro*. 1

DUTIA M.B. & PRICE R.F. Interaction between the vestibulo-collic reflex and the cervico-collic stretch reflex in the decerebrate cat. 19

BROWN J. & CORR L. Renal mechanisms of human α-atrial natriuretic peptide in man. 31

SAHIN Gulderen, WEBBER S.E. & WIDDICOMBE J.G. Lung and cardiac reflex actions on the tracheal vasculature in anaesthetized dogs. 47

OLESEN Søren-Peter Regulation of ion permeability in frog brain venules. Significance of calcium, cyclic nucleotides and protein kinase C. 59

CURRY F.E., MICHEL C.C. & PHILLIPS Mary E. Effect of albumin on the osmotic pressure exerted by myoglobin across capillary walls in frog mesentery. 69

MCGEOWN J.G., MCHALE N.G. & THORNBURY K.D. The role of external compression and movement in lymph propulsion in the sheep hind limb. 83

DUYSENS J., MAES H. & ORBAN G.A. The velocity dependence of direction selectivity of visual cortical neurones in the cat. 95

FARACI Frank M., HEISTAD Donald D. & MAYHAN William G. Role of large arteries in regulation of blood flow to brain stem in cats. 115

ATTWELL David, MOBBS Peter, TESSIER-LAVIGNE Marc & WILSON Martin Neurotransmitter-induced currents in retinal bipolar cells of the axolotl, *Ambystoma mexicanum*. 125

COOPER K.E., NAYLOR A.M. & VEALE W.L. Evidence supporting a role for endogenous vasopressin in fever suppression in the rat. 163

CONSTANTI A. & SIM J.A. Calcium-dependent potassium conductance in guinea-pig olfactory cortex neurones *in vitro*. 173

COHEN C.J. & MCCARTHY R.T. Nimodipine block of calcium channels in rat anterior pituitary cells. 195

SHIBASAKI Tohru Conductance and kinetics of delayed rectifier potassium channels in nodal cells of the rabbit heart. 227

HORIE Minoru, IRISAWA Hiroshi & NOMA Akinori Voltage-dependent magnesium block of adenosine-triphosphate-sensitive potassium channel in guinea-pig ventricular cells. 251

DUDEK F. Edward & GRIBKOFF Valentin K. Synaptic activation of slow depolarization in rat supraoptic nucleus neurones *in vitro*. 273

ANDERSON Page A.W., KILLAM Allen P., MAINWARING Richard D. & OAKELEY Annette E. *In utero* right ventricular output in the fetal lamb: the effect of heart rate. 297

BALDISSERA Fausto, CAMPADELLI Paola & PICCINELLI Lino The dynamic response of cat gastrocnemius motor units investigated by ramp-current injection into their motoneurones. 317

GOLDSHLEGGER R., KARLISH S.J.D., REPHAELI A. & STEIN W.D. The effect of membrane potential on the mammalian sodium–potassium pump reconstituted into phospholipid vesicles. 331

PALMER J.M., WOOD J.D. & ZAFIROV D.H. Purinergic inhibition in the small intestinal myenteric plexus of the guinea-pig. 357

PALMER J.M., WOOD J.D. & ZAFIROV D.H. Transduction of aminergic and peptidergic signals in enteric neurones of the guinea-pig. 371

HORCHOLLE-BOSSAVIT Ginette, JAMI Léna, PETIT J. & SCOTT J.J.A. Activation of cat motor units by paired stimuli at short intervals. 385

BALLARD H.J., COTTERRELL D. & KARIM F. Appearance of adenosine in venous blood from the contracting gracilis muscle and its role in vasodilatation in the dog. 401

NACHSHEN D.A. & SANCHEZ-ARMASS S. Co-operative action of calcium ions in dopamine release from rat brain synaptosomes. 415

MANOHAR Murli Transmural coronary vasodilator reserve and flow distribution during maximal exercise in normal and splenectomized ponies. 425

NAKAI Masatsugu Contractile effects of perivascularly applied vasopressin on the pial artery of the cat brain. 441

FISCHMEISTER Rodolphe & HARTZELL H. Criss Cyclic guanosine 3′,5′-monophosphate regulates the calcium current in single cells from frog ventricle. 453

BENHAM C.D., BOLTON T.B., BYRNE N.G. & LARGE W.A. Action of externally applied adenosine triphosphate on single smooth muscle cells dispersed from rabbit ear artery. 473

BRUM Gustavo & RIOS Eduardo Intramembrane charge movement in frog skeletal muscle fibres. Properties of charge 2. 489

LANCASTER B. & PENNEFATHER P. Potassium currents evoked by brief depolarizations in bull-frog sympathetic ganglion cells. 519

JACOB Ron, LIEBERMAN Melvyn, MURPHY Elizabeth & PIWNICA-WORMS David Effect of sodium–potassium pump inhibition and low sodium on membrane potential in cultured embryonic chick heart cells. 549

JACOB Ron, LIEBERMAN Melvyn & LIU Shi Electrogenic sodium–calcium exchange in cultured embryonic chick heart cells. 567

OHMORI Harunori Gating properties of the mechano-electrical transducer channel in the dissociated vestibular hair cell of the chick. 589

NODA Hiroharu & WARABI Tateo Responses of Purkinje cells and mossy fibres in the flocculus of the monkey during sinusoidal movements of a visual pattern. 611

RANDLE John C.R. & RENAUD Leo P. Actions of γ-aminobutyric acid on rat supraoptic nucleus neurosecretory neurones *in vitro*. 629

MACAGNO Eduardo R., MULLER Kenneth J. & PITMAN Robert M. Conduction block silences parts of a chemical synapse in the leech central nervous system. 649

PROCEEDINGS OF THE PHYSIOLOGICAL SOCIETY

6–7 *January* 1987

Charing Cross Meeting

DEMONSTRATIONS

Curtin N.A., Phillips S.K. & Woledge R.C. An ergometer for isovelocity movement of small, isolated muscles. 2*P*

Garyside Ivor B. Automatic D.C. level cancellation: an alternative to capacitor-coupled amplifiers. 3*P*

Chapman J.T., Hreash F. & Laycock J.F. Inclusion of an extracorporeal circulation in the anaesthetized rat. 4*P*

Harrison F.G., Rawlinson S.R. & Wasserman R.S. A Z-80-based signal averager suitable for class use. 5*P*

Dean J.W., Dilly S.G. & Lab M.J. Increased afterload shortens the absolute refractory period of the *in situ* left ventricle of the anaesthetized pig. 6*P*

Robinson N.L., Rowe I.C.M. & Sedgwick E.M. An automated microcomputer-based system for estimating spinal inhibition in man. 7*P*

Johnson C.D. Pancreatic secretion in the conscious unrestrained rat. 8*P*

Black C., Darton K., Rawlinson D.W., Tooke J.E. & Williams S.A. The assessment of vasospastic disease in man using television microscopy and a standardized cold challenge. 9*P*

Clarke J.A., de Burgh Daly M. & Ead H.W. Method for structural analysis of cat and rat carotid body using an image processor. 10*P*

Dean J.W., Dilly S.G., Lab M.J., Rawlings D. & Smith G. Computer analysis of electromechanical signals recorded from the epicardium of the anaesthetized pig. 11*P*

Shirley D.G., Walter S.J. & Zewde T. Measurement of glomerular filtration rate in conscious rats: assessment of the osmotic minipump method. 12*P*

Daniel P.M., Guthrie D.L., Pleasance S.E. & Warley Alice Identifying T and B lymphocytes in the peripheral blood of rats using an immunocytochemical procedure. 13*P*

Kyle Helen, Robinson N.P., Ward J.P.T. & Widdicombe J.G. Measurement of mucus [H^+] and other ionic concentrations in the isolated trachea of the ferret. 14*P*

Clough Geraldine, Noor Noriah & Smaje L.H. The use of implanted polyvinyl sponge to assess the sensitivity of newly grown blood vessels to inflammatory agents in the rat. 15*P*

Clough Geraldine, Knox P. & Smaje L.H. A new approach to the measurement of capillary surface area. 16*P*

Gamble J. & Smaje L.H. Densitometric assessment of the fluid fluxes across the fenestrated capillaries of submandibular glands in the anaesthetized rabbit *in vivo*. 17*P*

Biggs T., Noble M.I.M., Seed W.A., Sitsapesan R. & Walker J.M. Internal recirculation of activator calcium in guinea-pig isolated papillary muscle. 18*P*

Campa J.S., Greenhalgh R.M. & Powell J.T. Culture of smooth muscle cells from human aortic biopsies. 19*P*

Wright D.D.I. & McCollum C.N. Human ambulatory venous pressure measurement in the assessment of calf-muscle pump function in limbs with chronic venous ulceration. 20*P*

Smedley F. & Wastell C. Duodenal mucosal cell replication rates in duodenitis and duodenal ulcer-experiments in mastomys (*Praomys natalensis*). 21*P*

Ashmore J.F. A two-chip video contrast enhancer. 22*P*

Bobbert M.F., Hoek E., van Ingen-Schenau G.J., Sargeant A.J. & Schreurs A.W. A model to demonstrate the power transporting role of biarticular muscles. 23*P*

Hamilton R.D. & Winning A.J. Dry-particle aerosol generation with a fluidized bed: a method of delivering drug to the lung periphery. 24*P*

Connell S., Guz A., Murphy K., Shea S.A. & Smith G. A computerized system for recording and analysis of breathing and other physiological variables in man. 25*P*

Guz A., Innes J.A. & Murphy K. Respiratory modulation of left ventricular stroke volume in man measured using pulsed Doppler ultrasound. 26P

Carter D.A. & Lightman S.L. Dual microinjections into the brain of anaesthetized rats using θ-style micropipettes. 27P

Chakrabarti M.K. & Whitwam J.G. Interrupted high-frequency ventilation (IHFV) in anaesthetized dogs. 28P

Kingaby Rosalie O. Monophasic action potential dispersion in ischaemic segments of pig hearts *in situ*. 29P

COMMUNICATIONS

Billings P.J., Leaper D.J. & Monk C. The effect of lumbar epidural anaesthesia on subcutaneous P_{O_2} measurements in the arm and leg in man: a preliminary report. 30P

Bolsover Stephen R. Three components of voltage-dependent calcium influx in mouse neuroblastoma cells. 31P

Cherksey B.D. & Zeuthen T. A membrane protein with a K^+ and a Cl^- channel. 32P

Christensen O. & Zeuthen T. The baseline-current in patch-clamp experiments is due to a membrane protein. 33P

Attwell David & Brew Helen A glutamate-activated carrier in glial cells isolated from the axolotl retina. 34P

James P.S., Smith M.W., Tivey D.R. & Wilson T.J.G. Pig enterocytes preferentially acquire an Na^+-dependent transport system for neutral amino acids during early neonatal development. 35P

Lightman Stafford L. & Young W. Scott Hypothalamic vasopressin, oxytocin, dynorphin and enkephalin mRNA in the rat: response to an osmotic stimulus. 36P

Lightman Stafford L. & Seckl Jonathan R. Effect of intracerebroventricular vasopressin on intracranial pressure in conscious goats. 37P

Keen P., Robinson J.P., Tomlinson D.R. & Willars G.B. Axonal transport of substance P-like immunoreactivity in rats with long-term experimental diabetes. 38P

Warley Alice Alterations in the concentration of potassium in pyknotic thymocytes of diabetic rats. 39P

James P.S., Smith M.W., Tivey D.R. & Wilson T.J.G. Selective effects of Epidermal Growth Factor on enterocyte differentiation in neonatal piglet intestine. 40P

Bannatyne Barbara A. & Blackshaw Susanna E. Sprouting responses to axon damage by touch and nociceptive cells in the leech *Hirudo medicinalis*. 41P

Cameron N.E., Cotter Mary & Robertson Sharon Effects of experimental diabetes on contractile properties of skeletal muscles of the rat and the effect of treatment with the aldose reductase inhibitor Statil (ICI 128436). 42P

Kucera Jan & Walro Jon M. Motor and sensory innervation of muscle spindles in the early post-natal rat. 43P

Al-Amood W.S. & Lewis D.M. Effects of long-term phasic stimulation of denervated slow-twitch muscle of the guinea-pig. 44P

Curtin N.A. & Woledge R.C. Force–velocity relation of living fibres from dogfish white muscle. 45P

Beck J.S., Pirie Susan C. & Potts D.J. The effect of strophanthidin on the basolateral and transepithelial membrane potentials of the *in vitro* perfused proximal convoluted tubule of the rabbit. 46P

Law R.O. Control of cell volume in rat renal slices following cold preservation. 47P

Brownlee A.A., Lee G., Mills Ivor H., Spinelli F. & Wakabayashi Y. Stimulation of kallikrein excretion by atrial natriuretic peptide (ANP) after suppression by angiotensin or amiloride in rats. 48P

Bird A.C., Chuang E.L., Fitzke F.W. & Holden A.L. Eye-ground and refraction in central serous retinopathy in man. 49P

Barnes G.R. & Eason R.D. Visual suppression of the vestibulo-ocular reflex in man during pseudo-random head movements. 50P

Cervero F., Miller R. & Mortensen N.J.McC. Temperature sensation in the anorectum of normal humans. 51P

Datta A.K. & Stephens J.A. Continuous electrical stimulation of adjacent fingers reduces the cutaneomuscular reflex response in human first dorsal interosseous muscle. 52P

Armstrong-James M. & Fox K. Convergence and divergence of input to layer IV rat barrel cortex. 53P

McGeown J.G., McHale N.G. & Thornbury K.D. Popliteal efferent lymph flow response to stimulation of the sympathetic chain in the sheep. 54*P*

Allen J.M., McCarron J.G. & McHale N.G. Short-lived excitatory response to sustained field stimulation in isolated bovine lymphatic vessels. 55*P*

Pippard Corinna & Roddie I.C. Resistance in the lymphatic system draining the sheep's foot. 56*P*

Glover P., Jamison J.P. & Wallace W.F.M. The bronchoconstrictor response to hypocapnic hyperventilation in man: a non-cholinergic mechanism. 57*P*

Banner N.R., Guz A., Horner R.L., McKenzie Errolyn, Shea S.A. & Yacoub M.H. Breathing patterns during relaxed wakefulness and stage-4 sleep in human recipients of combined heart-lung transplants compared with matched recipients of heart transplants and matched normal controls. 58*P*

Mifflin S.W., Spyer K.M. & Withington-Wray D.J. Intracellular labelling of neurones receiving carotid sinus nerve inputs in the cat. 59*P*

Sahin Gulderen, Webber S.E. & Widdicombe J.G. Effects of lung and cardiac reflexes on the tracheal vasculature of the dog. 60*P*

Bennett T., Gardiner S.M. & Harland D. Cardiovascular and dipsogenic effects of intracerebroventricular (i.c.v.) angiotensin II (AII) in Long Evans and Brattleboro rats. 61*P*

Bennett T., Compton A.M. & Gardiner S.M. Regional haemodynamic influences of the renin–angiotensin system and vasopressin during α-adrenoceptor antagonism in conscious Long Evans rats. 62*P*

Kelley Christine & Shepro D. *In vitro* contractility of bovine retinal microvascular pericytes compared with endothelial and vascular smooth muscle cells. 63*P*

Allen D.G., Harris M.B. & Smith G.L. Failure of action potentials during cyanide exposure in isolated glycogen-depleted ferret ventricular muscle. 64*P*

Beekman R.E., van Hardeveld C. & Simonides W.S. Influence of fura-2 concentration on Ca_i^{2+}-transients in cardiac myocytes from euthyroid and hyperthyroid rats. 65*P*

Booth A.P. & Marshall Janice M. Responses induced in muscle microcirculation of the rat by systemic hypoxia. 66*P*

Lever M.J. & Sharifi Nasrin The effects of transmural pressure and perfusate albumin concentration on the hydraulic conductivity of the isolated rabbit common carotid artery. 67*P*

Clough Geraldine & Michel C.C. The effects of plasmin on the permeability of single frog mesenteric capillaries. 68*P*

Berhe A., Harkes A. & Sibley C.P. Microvascular effects of histamine in the isolated dually perfused guinea-pig placenta. 69*P*

Dawson J.M. & Hudlicka O. Adaptations of the rat microvasculature of long-term administration of prazosin. 70*P*

Tooke J.E. & Williams S.A. Capillary hypertension during Valsalva manoeuvre in man. 71*P*

Blair S.D. & Greenhalgh R.M. The hypercoagulable response to haemorrhage in rabbits. 72*P*

Angerson W.J., Carter D.C. & Geraghty J. An autoradiographic technique for the focal measurement of gastric mucosal blood flow in the rat. 73*P*

Leiper J.B. & Maughan R.J. Isometric endurance capacity in males and females with open and occluded circulation. 74*P*

Hassan A.A.K. & Tooke J.E. The relationship between foot swelling rate and postural vasoconstriction in man. 75*P*

POSTER COMMUNICATIONS

Chapman J.T., Hreash F. & Laycock J.F. The cardiovascular effects of haemorrhage in the anaesthetized rat linked to an extracorporeal circulation. 76*P*

Gartside I.B., Laycock J.F. & Stansfield D.P. Effect of dexamethasone on quinine aversion in the Brattleboro rat. 77*P*

Bauman K.F., Firth J.A. & Ward Barbara J. Structure and permeability properties of interendothelial junctions in capillaries of the isolated perfused rat heart. 78*P*

Biggs T., Noble M.I.M., Seed W.A., Sitsapesan R. & Walker J.M. Influence of calcium and adrenaline on post-extrasystolic potentiation in human and guinea-pig isolated ventricular muscle. 79*P*

Archard L.C. & Bowles N.E. The detection of Coxsackie B virus in human myocardial biopsy samples by molecular hybridization. 80*P*

Al-Shamma Y.M.H., Hainsworth R., Morley C.A. & Wahbha M.M.A.E. Assessment of cardiovascular control in human subjects. 81*P*

Crisp A.J., Hainsworth R., McGregor K.H. & Tutt S.M. Effects of vasodilators on abdominal vascular resistance and capacitance in anaesthetized dogs. 82*P*

Knox P., Levick J.R. & McDonald J.N. Colloids, pressures and fluid mass inside the cavities of major limb joints in rabbits. 83*P*

Blatter L.A. & McGuigan J.A.S. Estimation of the upper limit of intracellular free magnesium $[Mg]_i$ in ferret ventricular muscle. 84*P*

Cameron N.E., Cotter Mary & Robertson Sharon Effects of experimental diabetes on conduction velocity in branches of the rat sciatic nerve and the effects of treatment with the aldose reductase inhibitor Statil (ICI 128436). 85*P*

Greenidge E., Hayter A., Suer A.H., Tugwell A.C. & Wali F.A. Effects of verapamil, diltiazem and nifedipine on influx of Ca^{2+}, Na^+ and K^+ into rat isolated ileum. 86*P*

Andrews Helen E., Dashwood M.R. & Wei E.T. Autoradiographic demonstration of an endothelium-dependent binding of corticotropin releasing factor to isolated rabbit aorta. 87*P*

Henderson A.H., Morgan R.O. & Newby A.C. The inhibition by sodium nitroprusside of ADP-induced calcium influx and calcium mobilization in human platelets. 88*P*

Atherton J.C., Bobinski H. & Davison J.M. Renal fluid handling and plasma atrial natriuretic peptide in human pregnancy. 89*P*

Harvey C.J., Holemans J.A., Shirley D.G. & Skinner J. Assessment of [^{51}Cr] ethylenediaminetetraacetate as a marker of extracellular volume in the rat. 90*P*

Barrett J., Clarke M., Robinson P.H. & Russell G.F.M. Delayed gastric emptying in patients with *anorexia nervosa*. 91*P*

Garcha G.S., McHugh P.R., Moran T.H., Robinson P.H. & Stephenson J.D. Development of cholecystokinin receptors and suppression of ingestion and gastric emptying in the rat. 92*P*

Rennie M.J. & Taylor P.M. Transport of glutamic acid across the sinusoidal membrane of perfused rat liver: regional localization and pH dependence. 93*P*

Pippard Corinna & Roddie I.C. Lymphatic clearance of saline injected into the sheep's foot. 94*P*

Beech D.J., Bolton T.B., Castle N.A. & Strong P.N. Characterization of a toxin from scorpion (*Leiurus quinquestriatus*) venom that blocks *in vitro* both large (BK) K^+-channels in rabbit vascular smooth muscle and intermediate (IK) conductance Ca^{2+}-activated K^+ channels in human red cells. 95*P*